

The genus *Ptilophora* (Lepidoptera, Notodontidae) in China, with description of a new species

Liusheng Chen^{1†}, Guohua Huang^{2‡}, Min Wang^{3§}

1 Department of Forestry, College of Agriculture, Shihezi University, Shihezi, Xinjiang, 832000, China **2** Institute of Entomology, College of Bio-safety Science and Technology, Hunan Agricultural University, Changsha 410128, Hunan Province, China **3** Department of Entomology, South China Agricultural University, Guangzhou 510642, China

† [urn:lsid:zoobank.org:author:D834C65D-AA86-47E1-825A-A4A7C701BCDC](http://urn.nbn.se/resolve?urn=urn:lsid:zoobank.org:author:D834C65D-AA86-47E1-825A-A4A7C701BCDC)

‡ [urn:lsid:zoobank.org:author:1433C74D-7C72-47F2-9072-D6325D84DD95](http://urn.nbn.se/resolve?urn=urn:lsid:zoobank.org:author:1433C74D-7C72-47F2-9072-D6325D84DD95)

§ [urn:lsid:zoobank.org:author:D683614E-1F58-4CA8-9D80-B23BD41947A2](http://urn.nbn.se/resolve?urn=urn:lsid:zoobank.org:author:D683614E-1F58-4CA8-9D80-B23BD41947A2)

Corresponding author: Min Wang (wangmin168@yahoo.com.cn)

Academic editor: Erik van Nieuwerkerken | Received 7 June 2010 | Accepted 23 August 2010 | Published 13 October 2010

[urn:lsid:zoobank.org:pub:666562FA-65C6-4B4C-9AA1-281CAB863A28](http://urn.nbn.se/resolve?urn=urn:lsid:zoobank.org:pub:666562FA-65C6-4B4C-9AA1-281CAB863A28)

Citation: Chen L et al. (2010) The genus *Ptilophora* (Lepidoptera, Notodontidae) in China, with description of a new species. ZooKeys 61: 69–75. doi: 10.3897/zookeys.61.494

Abstract

The genus *Ptilophora* Stephens in China is briefly reviewed, with the description of *P. nanlingensis* sp. n. The new species is most similar to *P. horieaurea* in wing pattern and to *P. jezoensis* in male genitalia, but they can be distinguished from each other by the following characters: forewing bright reddish brown in *P. nanlingensis*, chestnut brown in *P. horieaurea*; costa of male genitalia pointed, with a rounded subapical process ventrally in *P. jezoensis*, costa rounded, with apex inflated, and with pointed subapical process ventrally in *P. nanlingensis*. A key to the *Ptilophora* species from China and adjacent areas is presented and a distribution map is given. The holotype of the new species is deposited in the Department of Entomology, South China Agricultural University, P. R. China.

Keywords

Lepidoptera, Notodontidae, *Ptilophora*, new species

Introduction

The notodontid genus *Ptilophora* was established by Stephens in 1828 with *Phalaena variegata* Villers, 1789 as its type species. Currently, the genus consists of six species that are distributed in Europe (except northern Europe and the Iberian Peninsula), Caucasus, Asia minor, China, Far East Russia, Korea and Japan (Sugi 1982; Schintlmeister 1984; Kobayashi 1994; Wang 1996; Park et al. 1999; Wu and Fang 2003; Schintlmeister 2008). Hitherto, three species of the genus are restricted to China, *P. rufula* from Taiwan, and *P. ala* and *P. horieaurea* from mainland China. Adults of *Ptilophora* species emerge in late autumn. Schintlmeister and Fang (2001) described *P. jezoensis ala* as a new subspecies of *P. jezoensis* in Shaanxi Province; later, Kishida and Kobayashi (2002) revised the genus *Ptilophora*, divided the species into two species-groups: *plumigera* group and *jezoensis* group, and described two new species belonging to the *jezoensis* group from South West China: *P. horieaurea* Kishida and Kobayashi, 2002 and *P. fuscior* Kishida & Kobayashi, 2002. Schintlmeister (2008) raised *P. ala* to species, based on comparing the types of *P. ala* with those of *P. fuscior*, and reduced *P. fuscior* to a junior synonym of *P. ala*. In this paper, a new species of *Ptilophora* is described from China.

Key to the species of *Ptilophora* Stephens from China and adjacent areas

- 1 Antenna black; forewing with a prominent discal spot; median fascia of hindwing blackish; male genitalia with rounded valve 2
- Antenna brown to chestnut brown; forewings without prominent discal spot, median fascia of hindwing whitish or absent; male genitalia with irregular valves 3
- 2 Postmedian fascia of forewing is angled at M_1 ; male genitalia with broad uncus, valve with a large harpe *P. nobirae*
- Postmedian fascia of is not angled at M_1 ; uncus of male genitalia narrow, valve with a small triangular harpe *P. rufula*
- 3 Color of forewing distal to postmedian fascia darker than basal and median areas of forewing; postmedian fascia distinct whitish, uniform from costal margin to inner margin *P. ala*
- Color of forewing distal to postmedian fascia similar to basal and median areas of forewing; postmedian fascia enlarged into white wedge-shaped spot at costal margin 4
- 4 Forewing pale reddish brown, with two distinct rather straight whitish fasciae *P. jezoensis*
- Forewing reddish brown to chestnut brown, basal fascia indistinct 5
- 5 Ground color of forewing uniformly bright reddish brown; a dusting of pale blue-gray scales in median and terminal areas of forewing; postmedian fascia white in costal area; frons near base of antennae with whitish hairs; thorax

- with similar long hairs at base of forewing; uncus with a triangular ventral-middle process, lateral processes serrated; valve with a triangular ventral process subapically *P. nanlingensis* sp. n.
- Ground color of forewing chestnut brown; postmedian fascia yellowish brown in costal area; frons, thorax, and abdomen with yellowish-brown hairs; uncus with blunt ventral-middle process, lateral processes with smooth margins; valva with a rounded ventral process subapically *P. horieaurea*

Taxonomy

Ptilophora ala Schintlmeister & Fang, 2001

Ptilophora jezoensis ala Schintlmeister and Fang 2001: 88; Kishida and Kobayashi 2002: 87; Wu and Fang 2003: 650.

Ptilophora fuscior Kishida and Kobayashi 2002: 87 [synonymised by Schintlmeister, 2008].
Ptilophora ala; Schintlmeister 2008: 323 [raised to species].

Notes. This species can be distinguished by the postmedian fascia of the forewing, which is distinctly whitish, and the darker shading beyond the postmedian fascia.

Distribution: China (Shaanxi and Sichuan Provinces).

Ptilophora horieaurea Kishida & Kobayashi, 2002

Ptilophora horieaurea Kishida and Kobayashi 2002: 89.

Notes. This species can be distinguished by external characters: frons, thorax, and abdomen covered with yellowish-brown hairs, the postmedian fascia is covered with yellowish brown in the posterior and costal areas.

Distribution: China (Sichuan Province).

Ptilophora nanlingensis sp. n.

urn:lsid:zoobank.org:act:DA4A2641-4B7C-4102-BAE7-28578EB7E833

Figs 1–6

Diagnosis. The new species belongs to the *P. jezoensis* species group based on the wing pattern and male genital structure: forewing with distinct, whitish postmedian fascia, costa inflated and angulated apically. In the wing pattern, it seems to be closely related to *P. horieaurea*, whereas the male genital structures seem closer to those of *P. jezoensis*, but the two species can be distinguished from each other by the following characters:



Figures 1–2. Adults of *Ptilophora nanlingensis* sp. n. **1** male adult **2** female adult.

forewing bright reddish brown in *P. nanlingensis*, chestnut brown in *P. horieaura*; uncus three-dimensional, and the costa of the valve with a rounded subapical ventral process in *P. jezoensis*, uncus three-dimensional, bifurcated apically, with serrated edges, and costa of valve rounded with apex inflated and with pointed subapical ventral process in *P. nanlingensis* (see Figs 3–5).

Description. Male. Forewing length 15–18 mm. Antenna plumose, about 0.5 x length of forewing, with yellowish-white hairs at base. Thorax and abdomen with dark reddish-brown hair. Forewing ground color from bright reddish brown to fuscous brown; chocolate toward costal and posterior margins, fuscous in terminal area; antimerian fascia visible, straighter than postmedian fascia; postmedian fascia distinct, whitish, slightly convex at vein M_1 , forming a triangular whitish spot at costa, brighter at veins; outer margin with ground color covered with pale blue-gray scales; cilia dark brown. Hindwing fuscous; postmedial fascia absent, a whitish spot near tornus, cilia from apex to middle of outer margin yellowish brown, fuscous brown toward tornus.

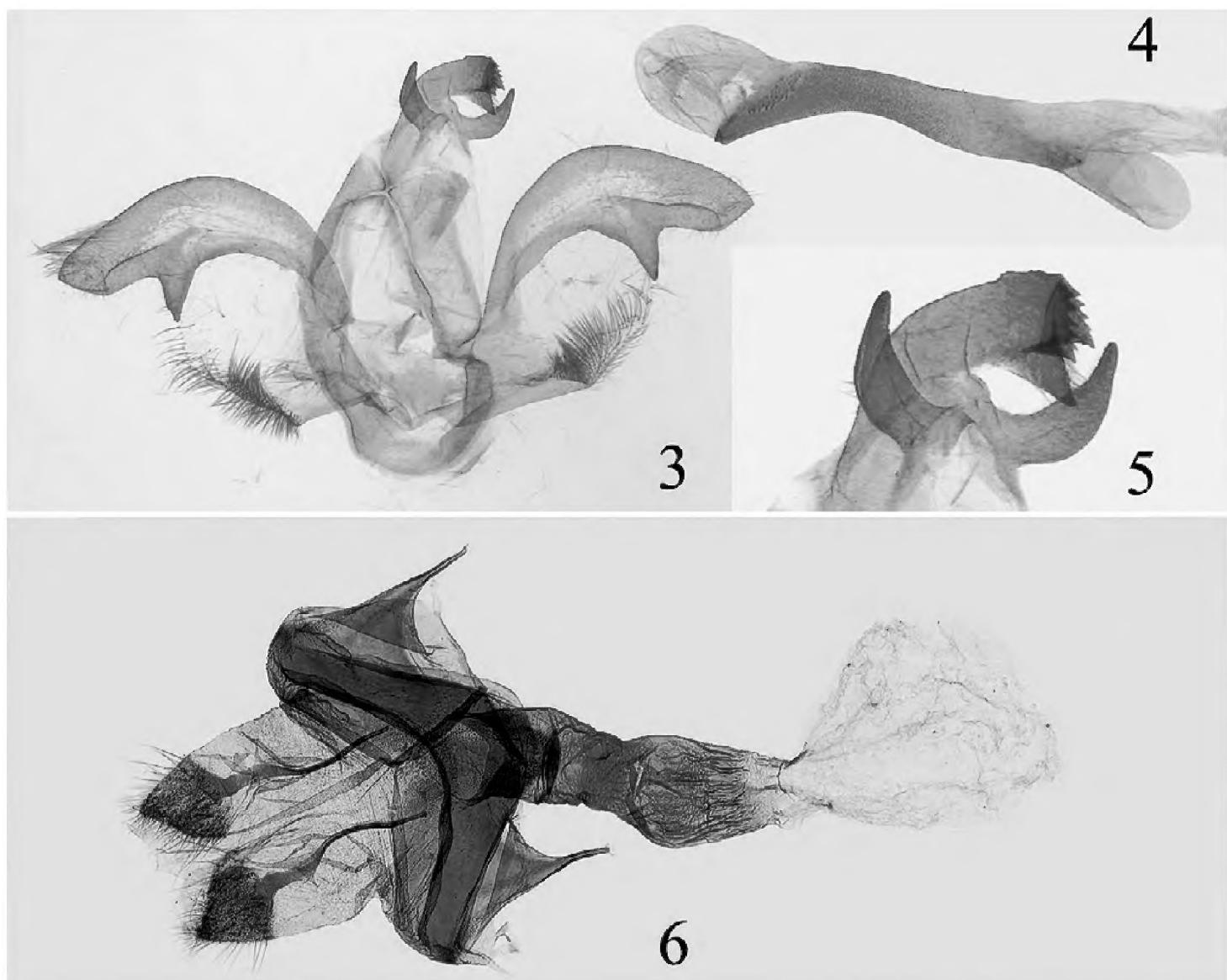
Female. Similar to male except forewing length 17 mm (n=1); antenna filiform; vertex, thorax and forewing uniform fuscous brown, abdomen yellowish brown.

Male genitalia. Uncus three-dimensional, bifurcated apically, with serrated edges; a long triangular ventral process derive from middle of branches, smooth ventrally, slightly serrated dorsally. Socii heavily sclerotized with two horn-shaped processes. Tegumen short and broad. Valva broad with a large triangular subapical process ventrally; costa rounded with apex inflated, cucullus quadrangular; sacculus with a triangular central process, with dense setae from middle to apex. Aedeagus slender, slightly curved dorsally near caudal end, carina penis serrated dorsally.

Female genitalia. Papilla analis rather broad, covered with thin hairs; the apophysis anterior shorter than apophysis posterior; ostium wide, well sclerotized; ductus bursae very lightly sclerotized, inflated mesially; corpus bursae small, membranous.

Holotype. Male, Nanling, Shaoguan, Guangdong, China, 15.XII.2008, Hou-Shuai Wang leg.. Deposited in the Department of Entomology, South China Agricultural University, Guangzhou, P. R. China.

Paratypes. 1 female, Nanling, Shaoguan, Guangdong, China, 21.IX.2006, Min Wang leg.; 3 males, Nanling, Shaoguan, Guangdong, China, 2.XII.2007, Liu-Sheng



Figures 3–6. Genital structure of *Ptilophora nanlingensis* sp. n. **3** valva **4** aedeagus **5** uncus **6** female genitalia.

Chen leg.; 3 males, 3.XII.2008, Liu-Sheng Chen and Hou-Shuai Wang leg., Nanling, Shaoguan, Guangdong, China; 1 male, 10.XII.2009, Hou-Shuai Wang leg., Nanling, Shaoguan, Guangdong, China. Deposited in the Department of Entomology, South China Agricultural University, Guangzhou, P. R. China. 2 males, 1 female, Yuecheng Ling, Guangxi, China, 1800 m, 26°06'N, 110°54'E, 5–8.XII.2007, Viktor Sinaev leg. Deposited in coll. A. Schintlmeister, Dresden.

Etymology. The specific name is derived from the type locality: Nanling Nature Reserve, Shaoguan City, Guangdong Province.

Bionomics. Bionomics. The moths were collected at light near 10°C the late autumn.

Remarks. The adults of *Ptilophora* emerge late autumn, some species even flying at temperatures near 0°C (Kishida and Kobayashi 2002). However, adult of *P. nanlingensis* fly at slightly higher temperature, close to 10° C late autumn, which is unusual for the genus.

Ptilophora rufula Kobayashi, 1994

Ptilophora rufula Kobayashi 1994: 17; Wang 1996: 201; Schintlmeister 2008: 322.
Ptilophora jezoensis rufula: Shintlmeister and Fang 2001: 22 [sunk as subspecies].

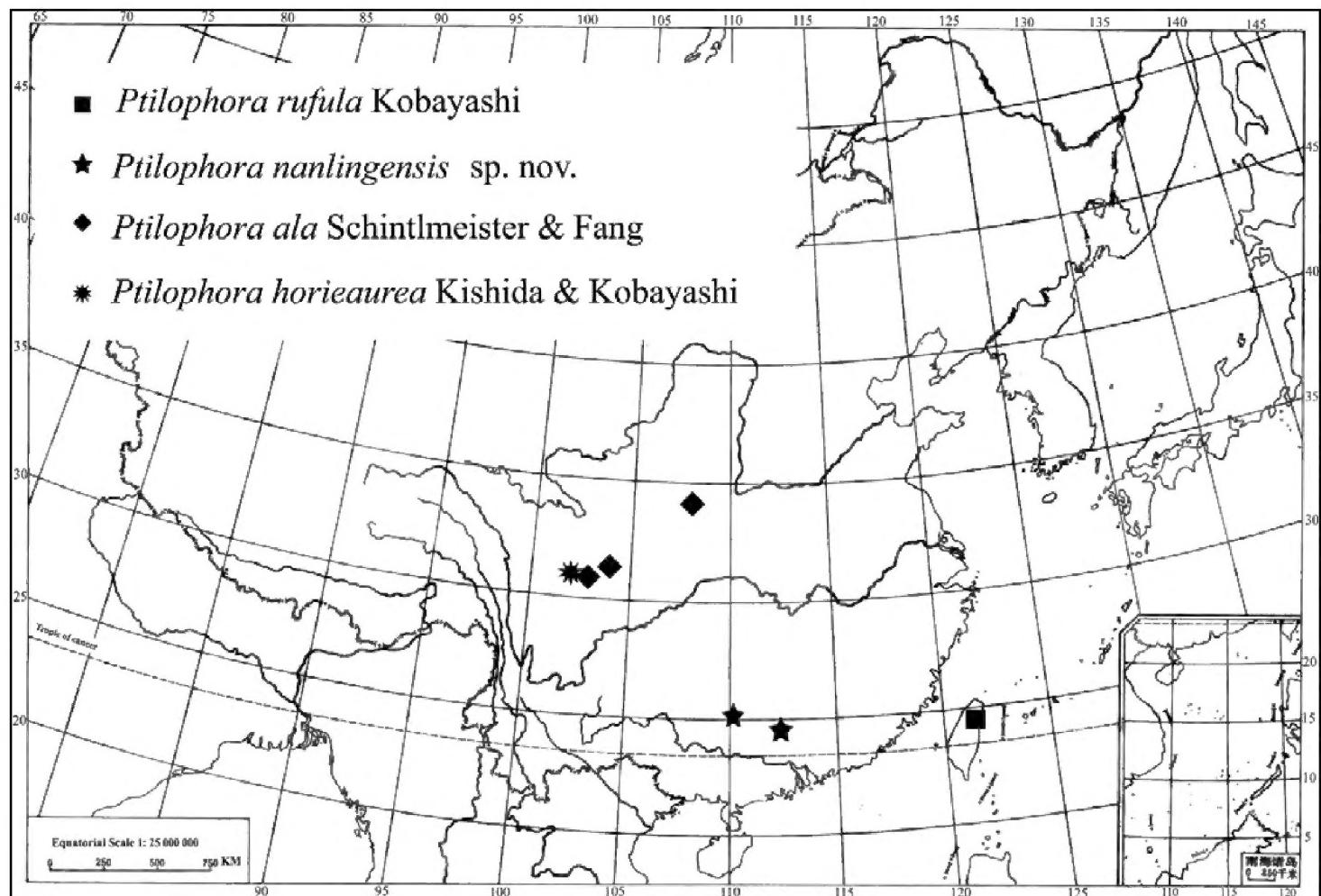


Figure 7. Distribution of Chinese *Ptilophora* species

Notes. Kobayashi (1994) described *P. rufula* in Taiwan. Schintlmeister and Fang (2001) listed it as a subspecies of *P. jezoensis* without any explanation. Kishida and Kobayashi (2002) revalidated it as a species. It belongs to the *plumigera* group, based on the round valva in the male genitalia.

Distribution: This species is restricted to Taiwan.

Acknowledgements

We are greatly indebted to Dr. Mamoru Owada (National Science Museum, Tokyo, Japan), Mr. Yasunori Kishida and Dr. Hideki Kobayashi (Tokyo, Japan) for their kind suggestions and help with the manuscript. Our thanks also go to Mr. Yue-Ning Gong (the director of the Nanling National Reserve, China), Mr. He-Shan Chen, Mr. Guo-Yi Wu, Mr. Hou-Shuai Wang and Mr. Yang Long (South China Agricultural University, China) for their welcome help in field work. The first author wishes to thank Dr. Alexander Schintlmeister (Germany) for his cordial support on his studies in many ways. research was partly by the Provincial Natural Science Foundation of Hunan, (no. 09JJ6028).

References

- Kishida Y, Kobayashi H (2002) Two new species of the genus *Ptilophora* (Lepidoptera, Notodontidae) from China. *Tinea* 17 (2): 86–91.
- Kobayashi H (1994) A new species of genus *Ptilophora* (Notodontidae) from Taiwan. Japan Heterocerists' Journal 177: 17–19.
- Park KT, Kim SS, Tshistjakov YA, Kwon YD (1999) Illustrated Catalogue of Moths in Korea (I). In: Park KT (Ed) Insects of Korea [Series 4]. Books LLC, Seoul, 290 pp.
- Sugi S (1982) Notodontidae. In: Inoue H, Sugi S, Kuroko H, Moriuti S, Kawabe A (Eds) Moths of Japan, Kodansha, Tokyo, I: 329 pp., II: 625 pp.
- Schintlmeister A (1984) Zum Status einiger fernöstlicher Taxa Notodontiden-Studien I. Zeitschrift der Arbeitsgemeinschaft Österr. Entomologen 35: 106–112.
- Schintlmeister A, Fang CL (2001) New and less known Notodontidae from mainland China. Neue Entomologische Nachrichten 50: 88.
- Schintlmeister A (2008) Palaearctic Macrolepidoptera: Notodontidae. Apollo Books, Stenstrup, 321–324.
- Wang XY (1996) Guide book to insect in Taiwan (17). Chu Hai Publishing Co., TaiBei, 201 pp.
- Wu CS, Fang CL (2003) Lepidoptera: Notodontidae. Fauna Sinica, Insecta. Science Press, Beijing, 649–651.